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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,943	11/03/2003	Tomohide Kudo	12844.51US01	4347

23552 7590 08/08/2005

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MINNEAPOLIS, MN 55402-0903

EXAMINER

JEFFERY, JOHN A

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 08/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/699,943

Applicant(s)

KUDO, TOMOHIDE

Examiner

John A. Jeffery

Art Unit

3742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☒ Claim(s) 2-6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103(a)

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

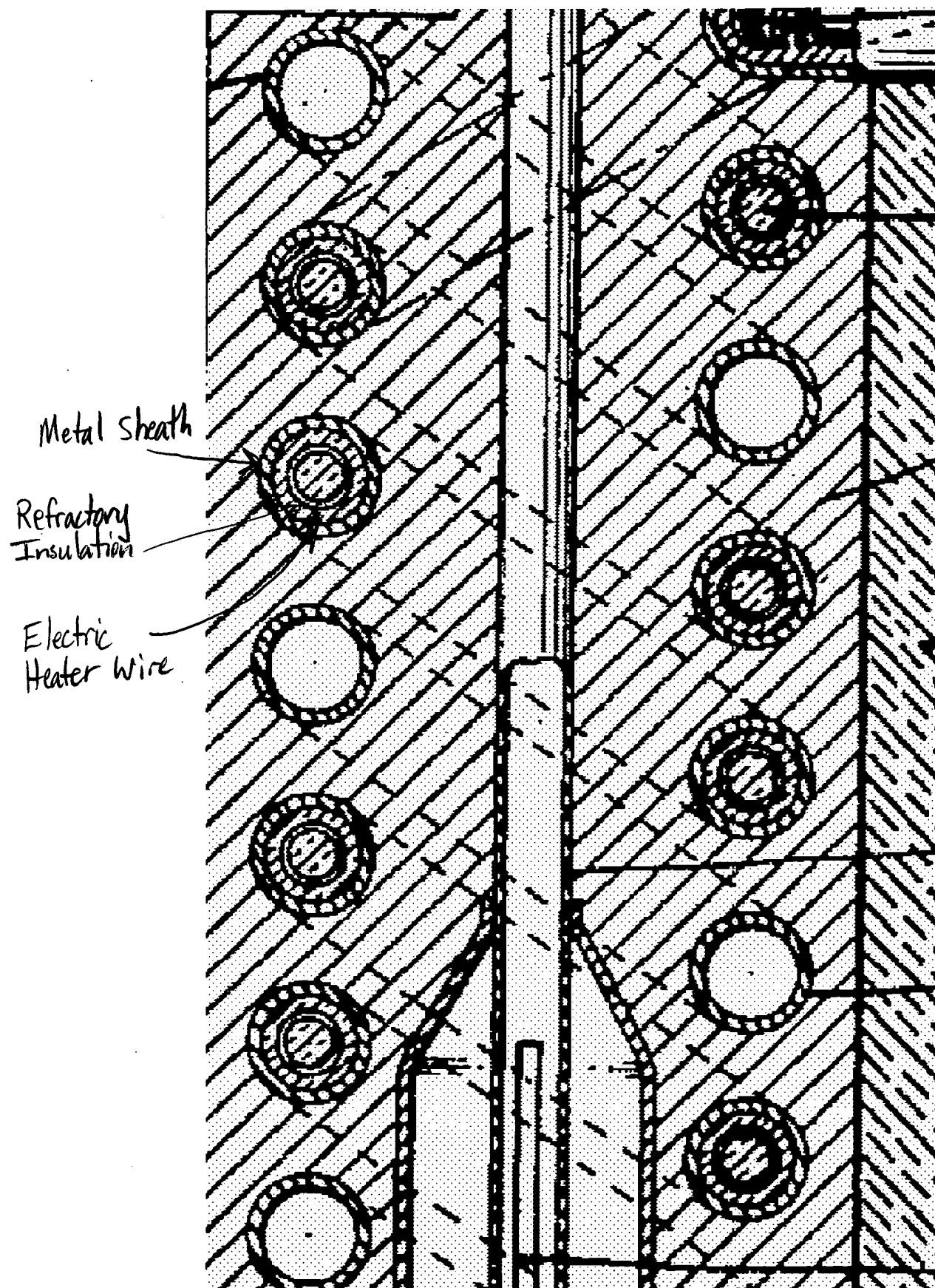
A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Beyrodt (US 2,097,581) in view of La Van (US 3,476,916) and further in view of Brosnan (US 4,343,989). The scope and breadth of the claim language did not preclude Beyrodt (US 2,097,581) who discloses a "heat storage apparatus" comprising a "heat storage material accommodation cell" (metallic sheath surrounding resistance wire) that accommodates "heat storage material" 6 comprising an electric resistance wire embedded within an unlabeled insulative refractory material.¹ The accommodation cell is spiral and is parallel to associated spiral fluid passageway 18. The fluid flowing in spiral passageway fully reads on the "heat exchanging fluid." See Fig. 1, a portion of which has been enlarged and annotated below for clarity.

¹ The scope and breadth of the term "heat storage material" does not preclude the combination of (1) the electric resistance wire, and (2) the surrounding insulation in which the wire is embedded.

Art Unit: 3742



Although it is unclear from Beyrodt (US 2,097,581) what material constitutes the insulation within the metallic sheath that surrounds the electric heater wire, heat storage materials, such as magnesium oxide, are nevertheless commonly used as such a surrounding insulation. La Van (US 3,476,916), for example, surrounds an electric resistance wire 10 with magnesium oxide insulation 15 within a metallic sheath 20. See Figs. 1 and 2 and col. 2, lines 63-67. Moreover, magnesium oxide is a well known insulative material for electric heaters that also possesses heat storage qualities as evidenced by Brosnan (US 4,343,989) in Fig. 3 and col. 3, line 19 – col. 4, line 15 (surrounding resistive heater wire 11 with magnesium oxide heat storage material).

In view of La Van (US 3,476,916) (teaching surrounding an electric heater wire with magnesium oxide insulation), and further noting Brosnan (US 4,343,989) (emphasizing the heat storage qualities of magnesium oxide), it would have been obvious to one of ordinary skill in the art at the time of the invention to utilize a heat storage material for the surrounding insulation of Beyrodt (US 2,097,581) to enhance the heat storing qualities of the heater and surrounding insulation, thus increasing heating efficiency.

Allowable Subject Matter

Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Other Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant should (1) separately consider the art, and (2) consider the art together with the previously cited prior art for potential applicability under 35 U.S.C. §§ 102 or 103 when responding to this action. IT 888 discloses a fluid heater with parallel spiral heater and fluid passages relevant to the instant invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Jeffery whose telephone number is (571) 272-4781. The examiner can normally be reached on Monday - Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans, can be reached on (571) 272-4777. All faxes should be sent to the centralized fax number at (571) 273-8300.

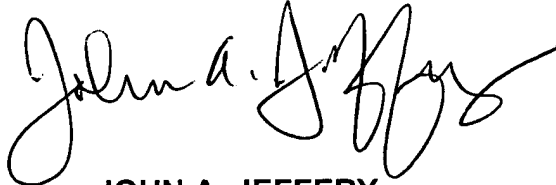
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Application/Control Number: 10/699,943

Page 6

Art Unit: 3742

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "John A. Jeffery". The signature is fluid and cursive, with a large initial "J" and a stylized "A".

**JOHN A. JEFFERY
PRIMARY EXAMINER**

8/5/05